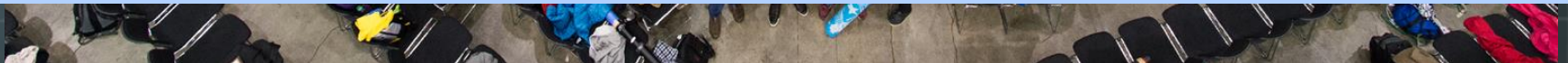


Synthetic Biology and iGEM

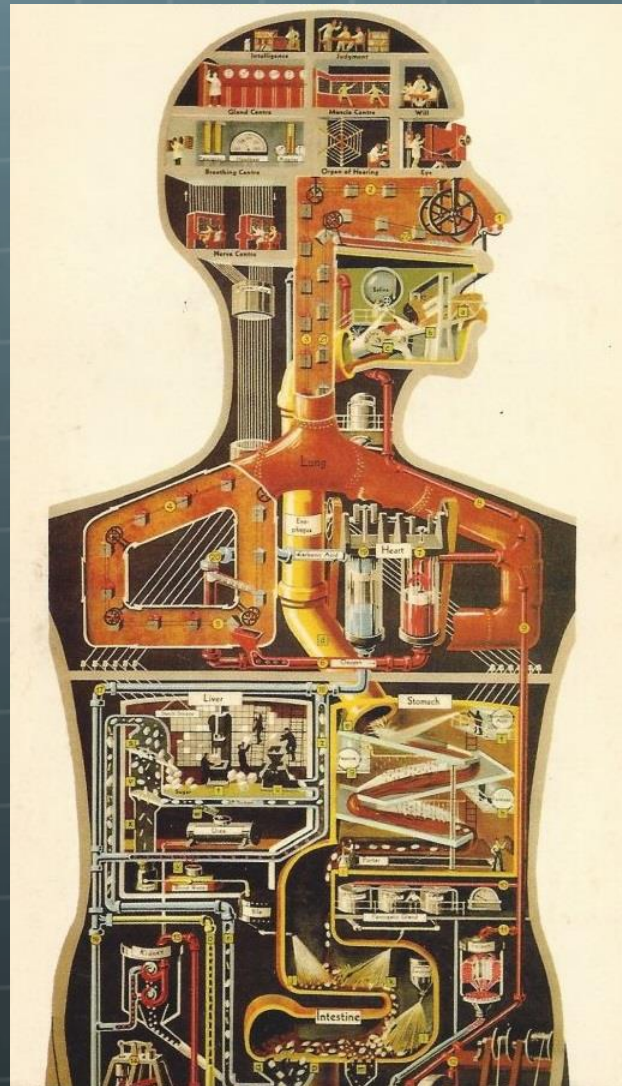


Genetically Engineered Machine (iGEM) Competition



iGEM Jamboree 2015

Synthetic biology: what is it?

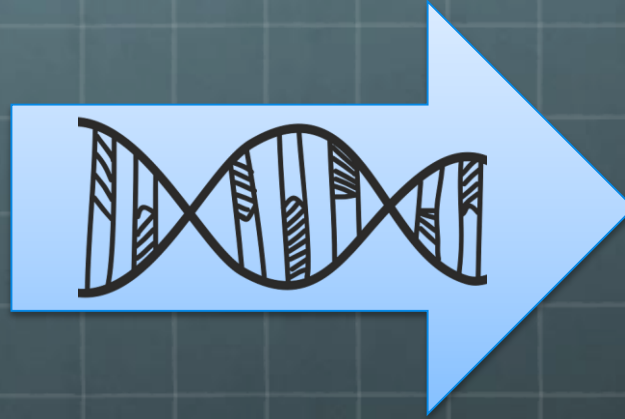


Cover of *Man Modified*, David Fishlock

“The Lego of Life”



Synthetic biology: how do we do it?

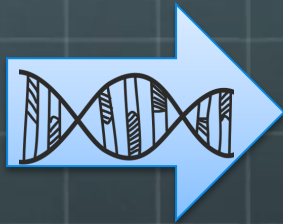


naturevideo

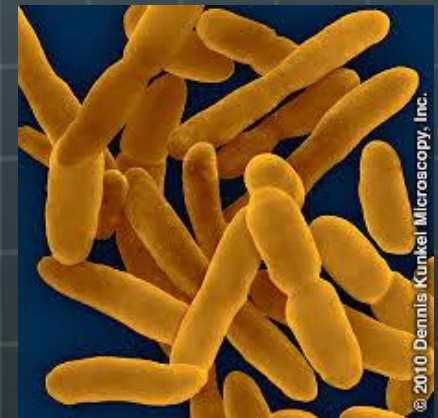
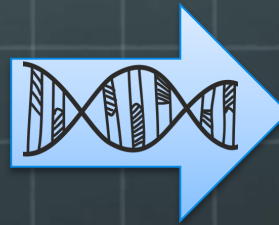
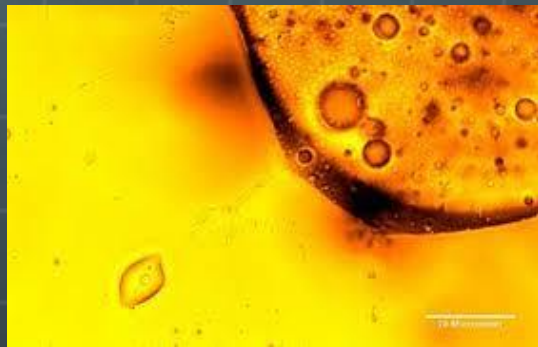
202 min

A horizontal band of bright blue and white light, possibly a laser pulse or plasma discharge, is shown against a black background. The light is concentrated in the center and fades towards the edges. The text "202 min" is visible in the bottom left corner of the image.

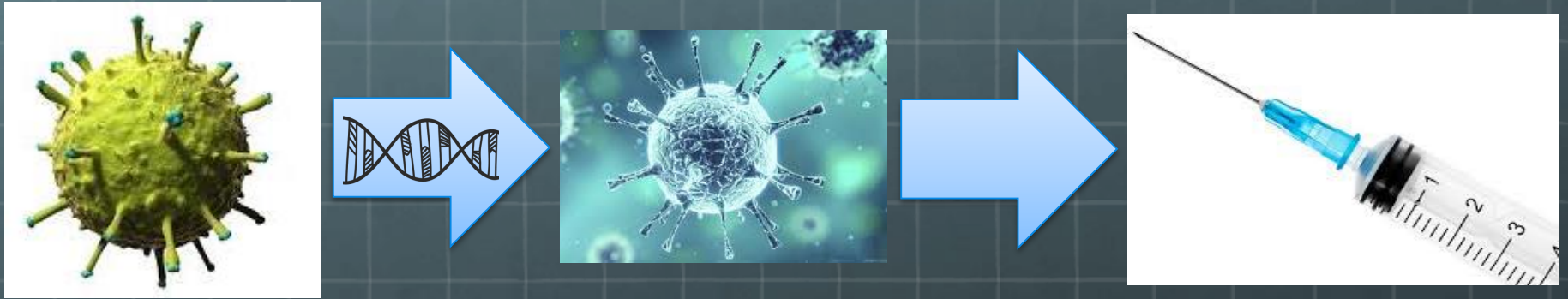
Synthetic biology: why is it important?



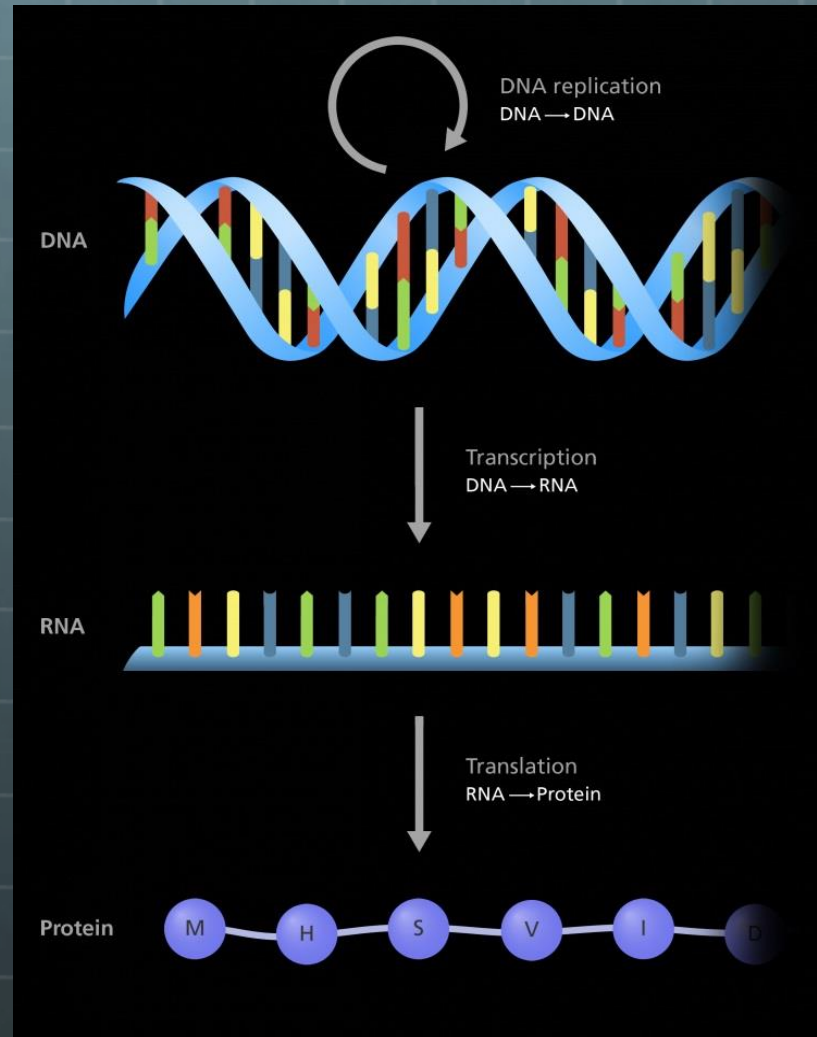
Synthetic biology: why is it important?

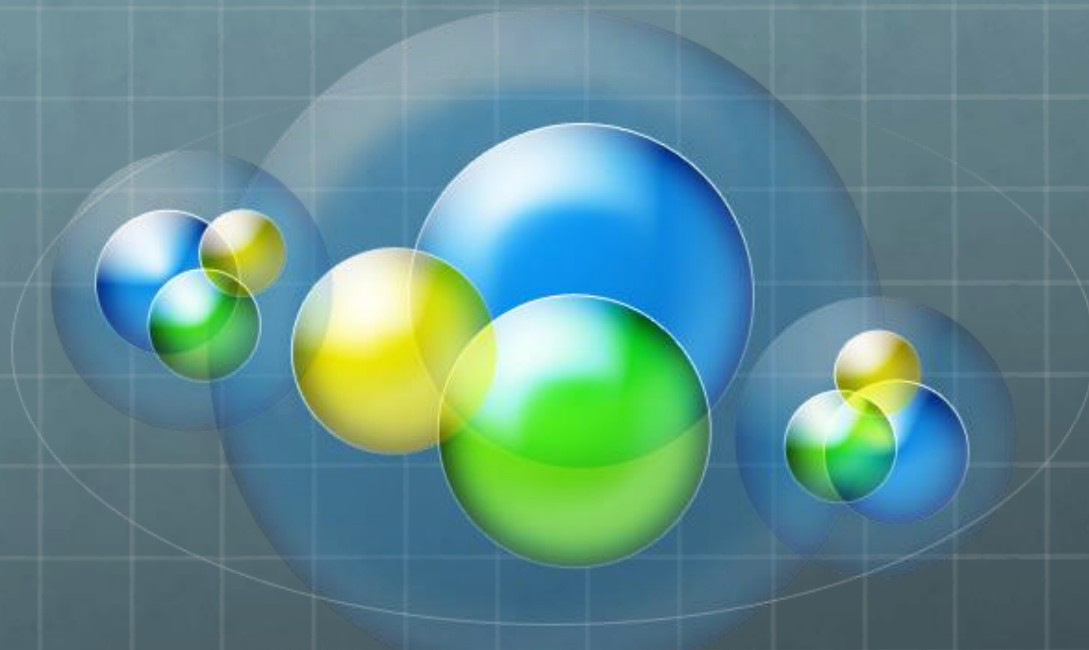


Synthetic biology: why is it important?



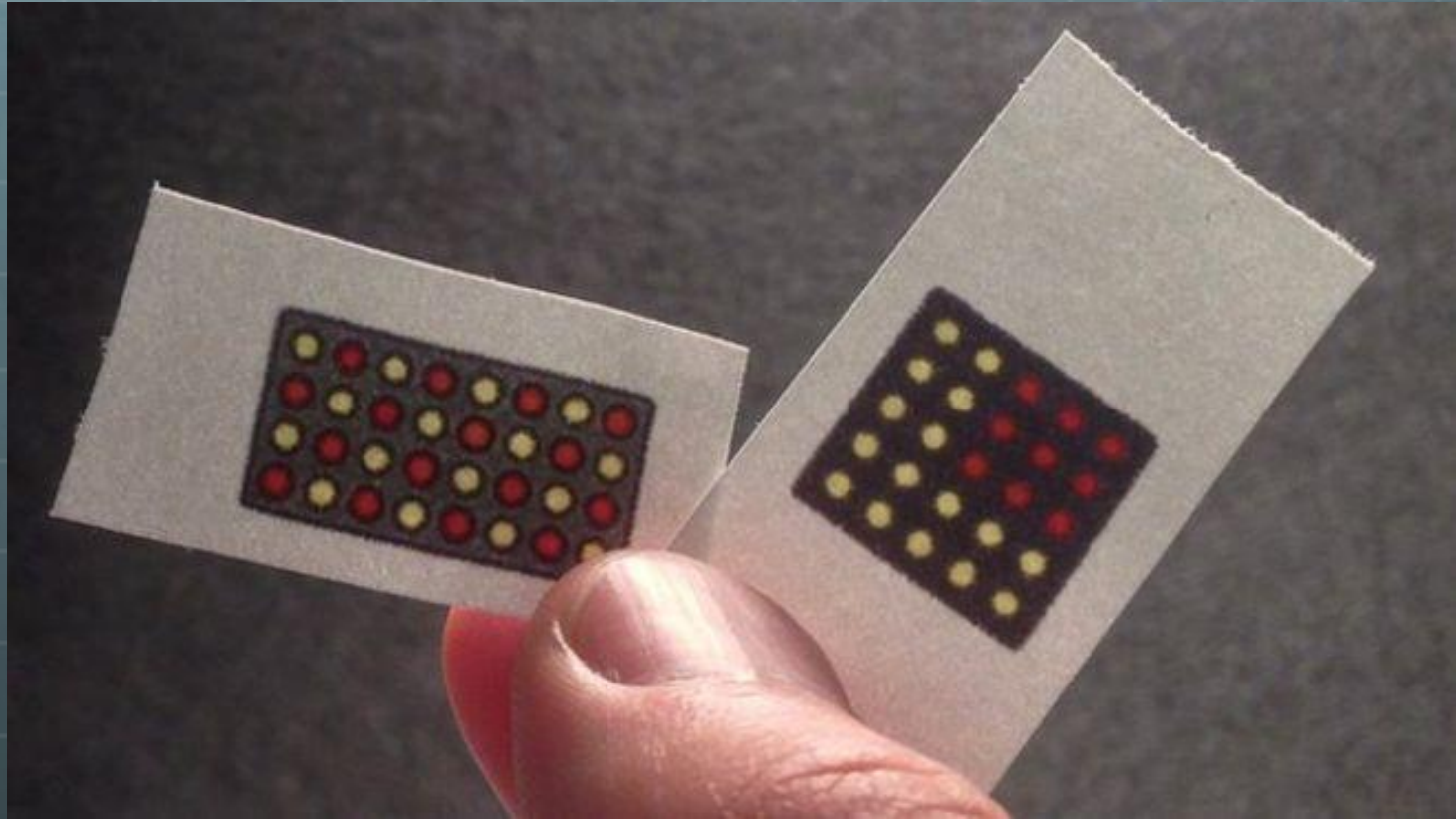
Transcription and Translation





Our Project: Paper-Based Cell-Free Thallium Sensor

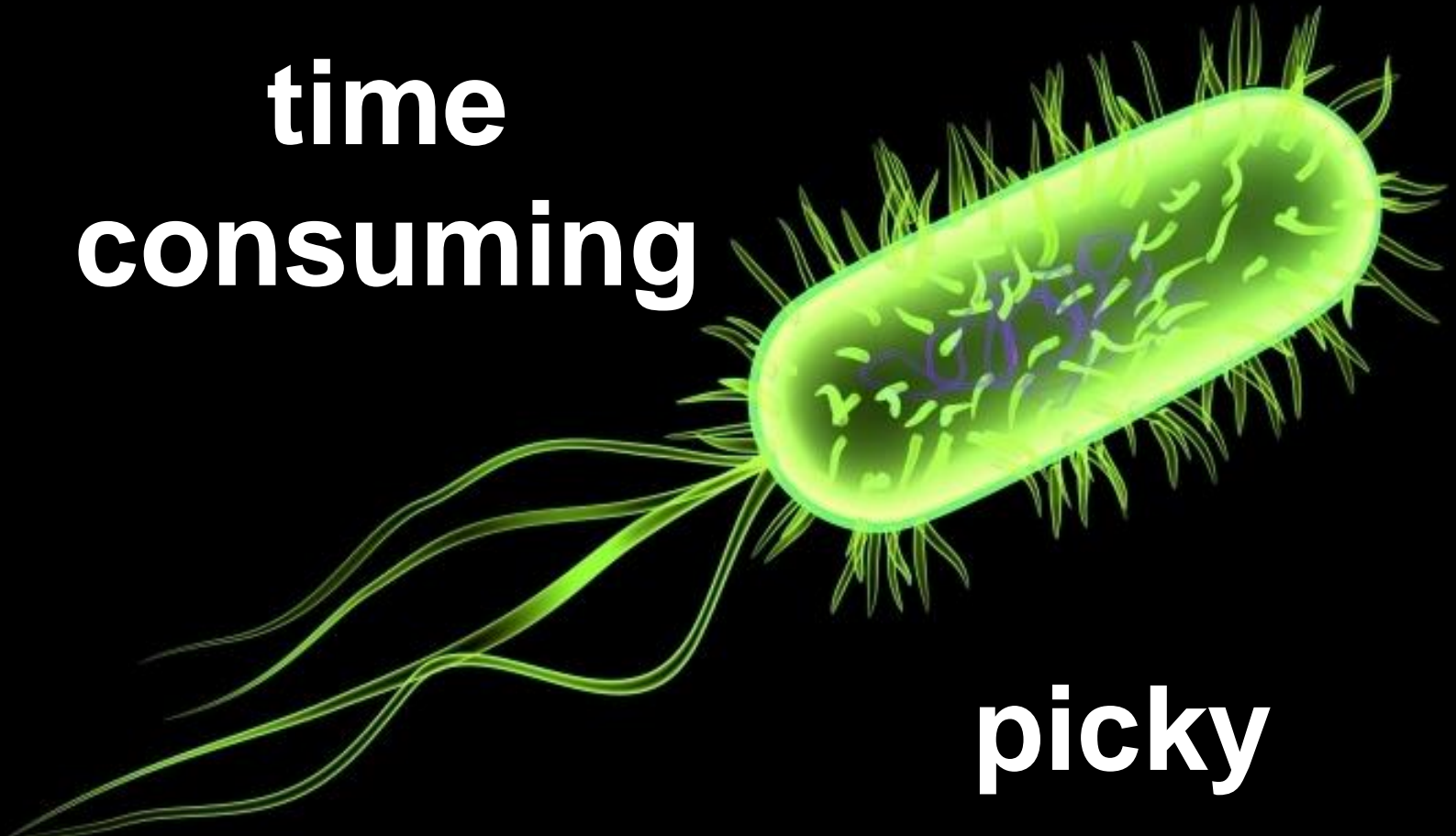
Paper-Based Sensor



BBC, "Prototype paper test can detect Ebola strains"

Cell-Free

**time
consuming**

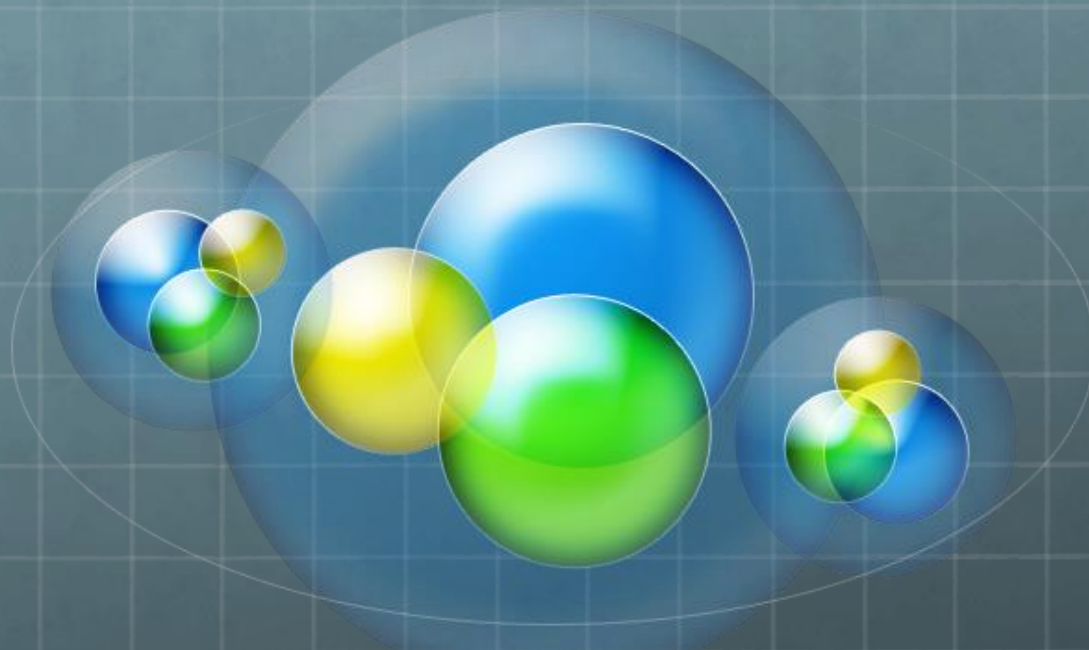


picky

Thallium

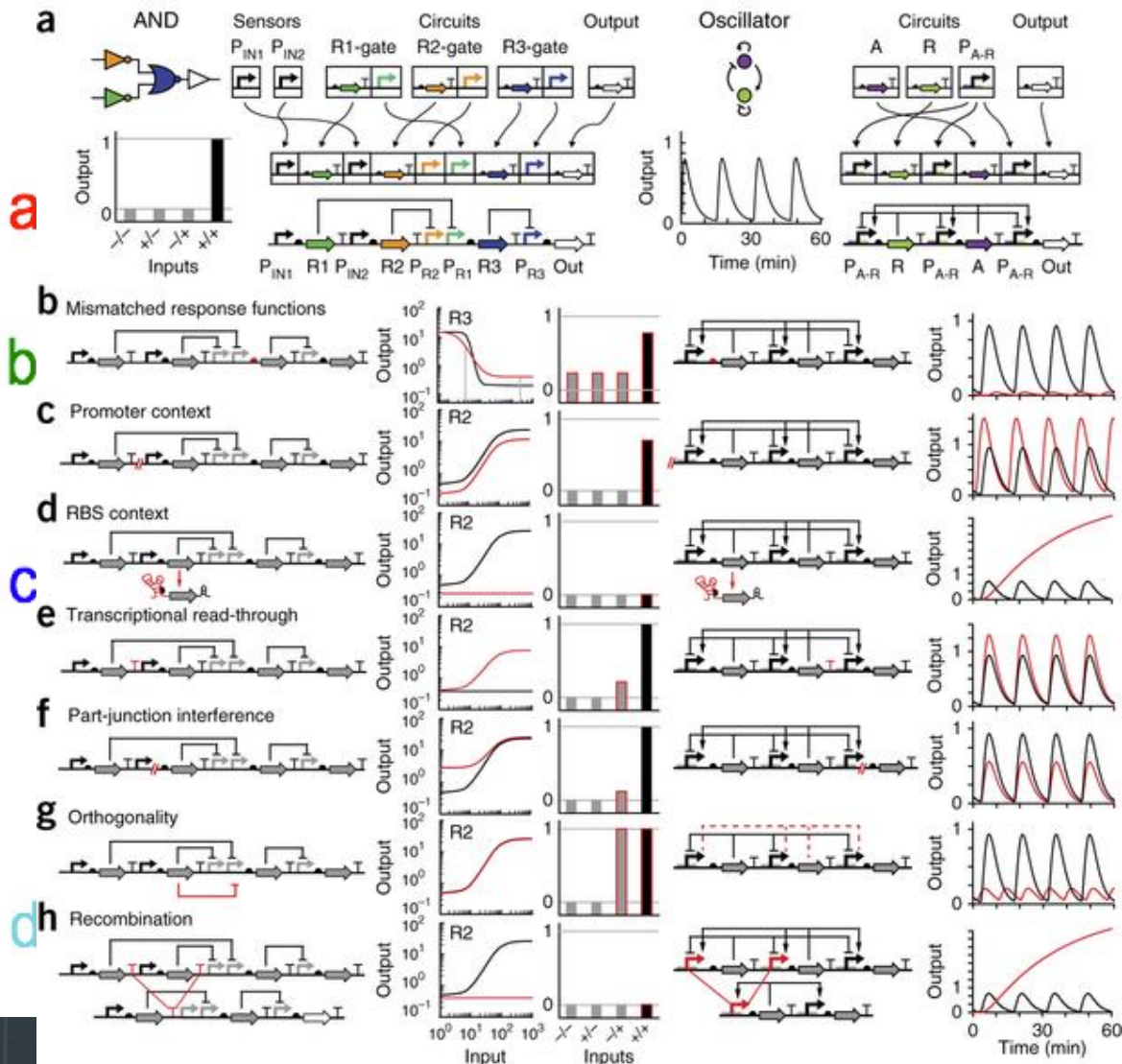
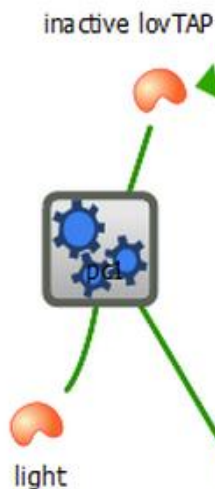
81
Tl
204.38



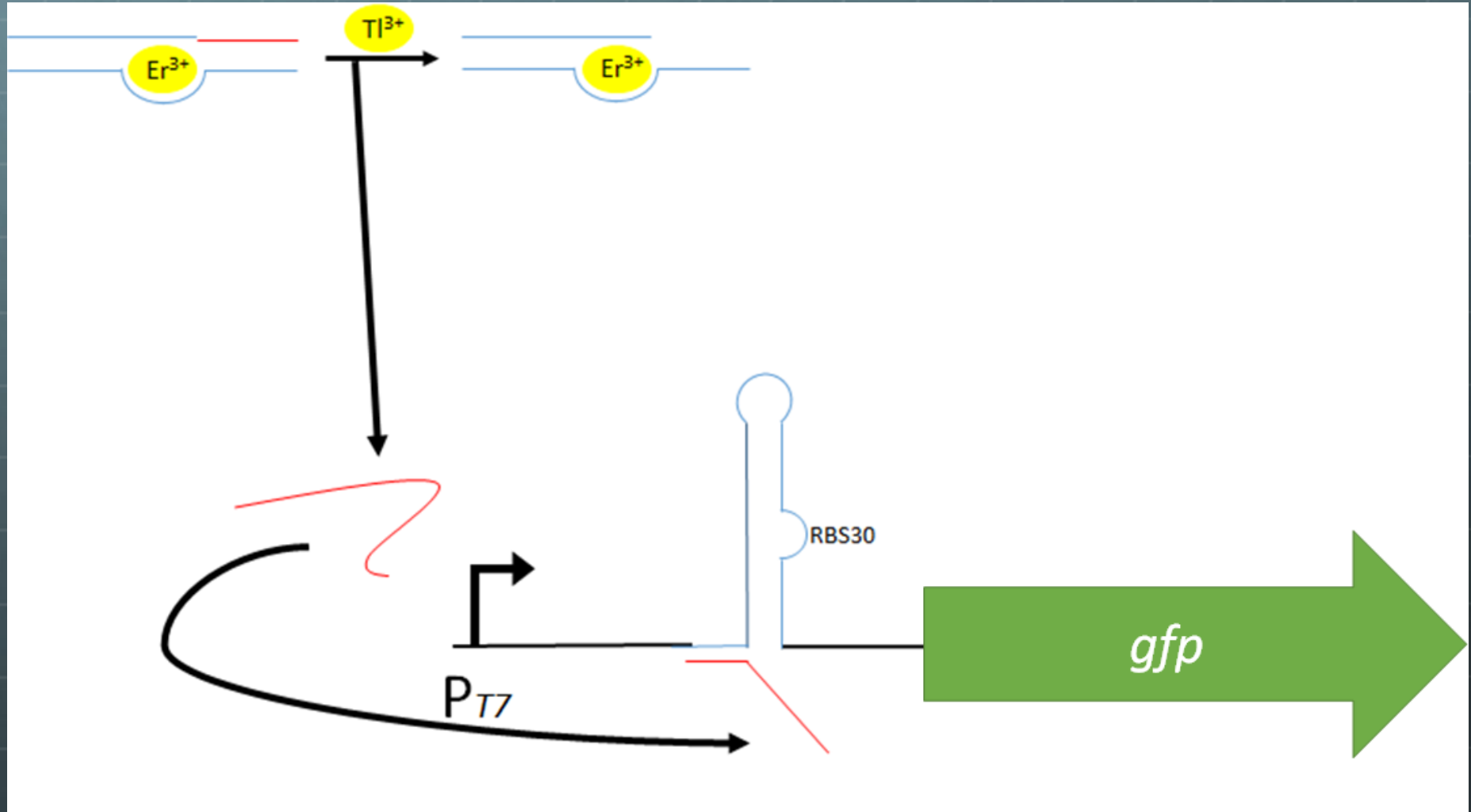


Our Project: Paper-Based Cell-Free Thallium Sensor

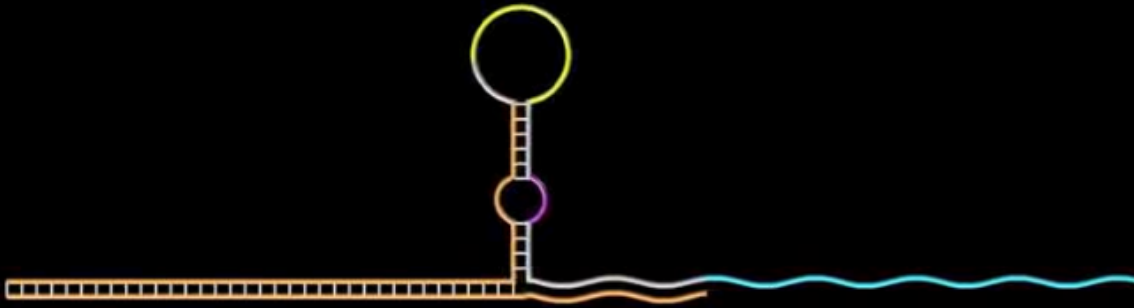
Genetic Circuits



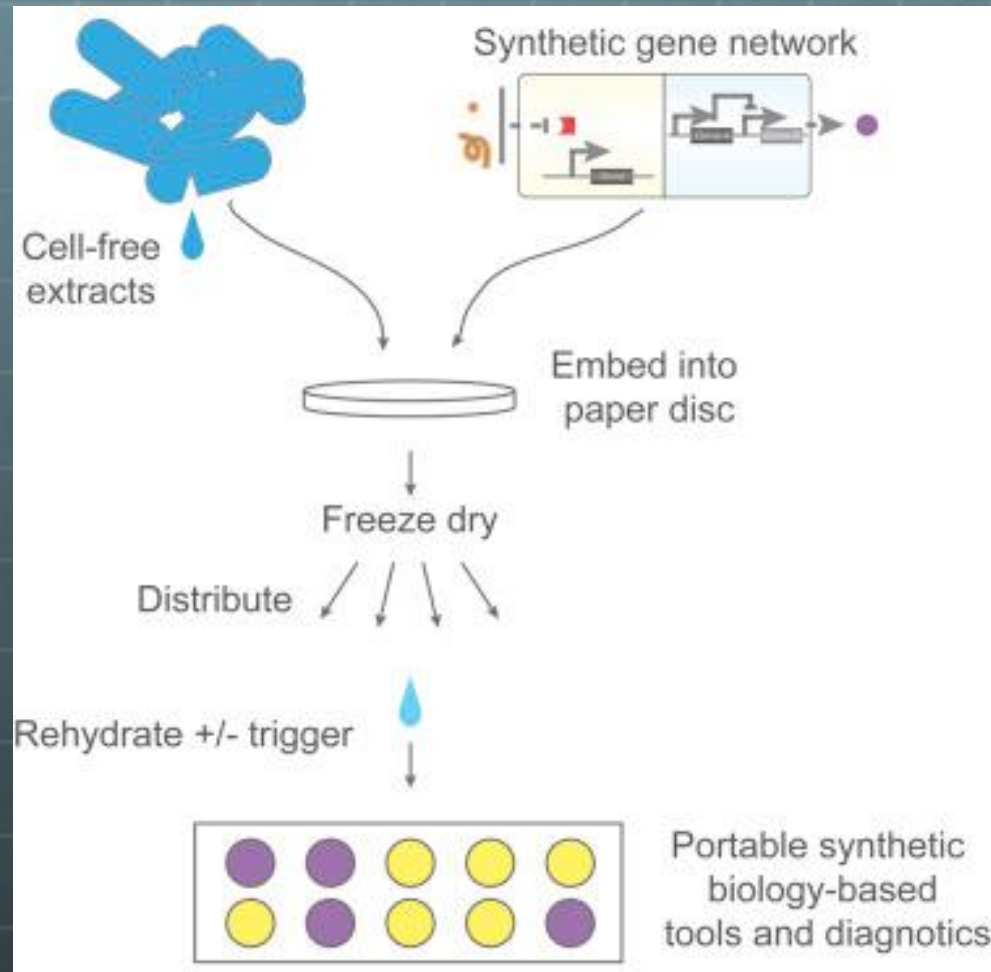
Genetic Circuit Diagram



Toehold Switch



Cell-Free, Paper-Based Sensor



Paper-Based Synthetic Gene Networks, Pardee et al., 2014

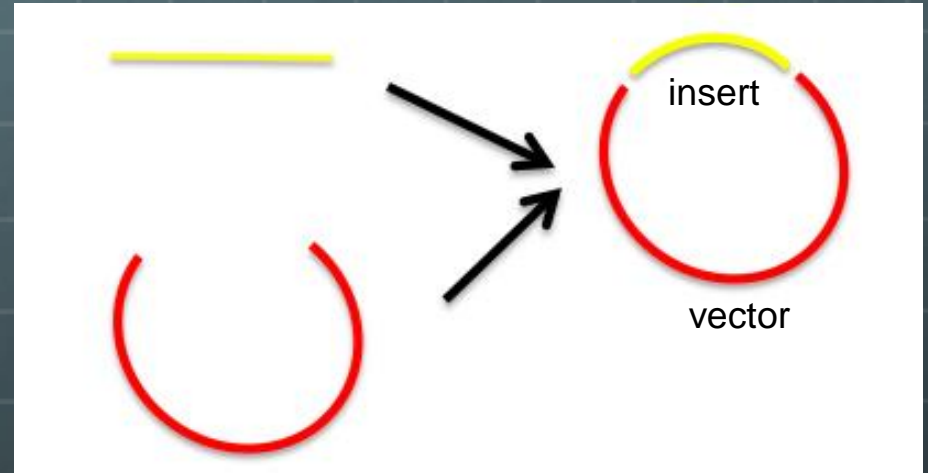
Cloning

Step 1: Cut DNA

Step 2: Gel
Electrophoresis

Step 3: Ligate DNA

Step 4:
Transformation



PCR

- Polymerase Chain Reaction

